

Application No. 10/782,513
Amendment dated September 28, 2005
After Final Office Action of July 28, 2005

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Docket No.: 08211/0200373-USO (P05759)

AMENDMENTS TO THE CLAIMS

1-8. (Canceled)

9. (Currently amended) A ~~current regulation circuit for current protection~~, comprising:

a current mirror arranged with a sense transistor and a power transistor;

a current sink that is coupled to a drain of the sense transistor, wherein the current sink pulls down a drain voltage of the sense transistor if a current flowing through the power transistor is less than a limit;

a control component that is arranged to limit the current flowing through the power transistor if the drain voltage of the sense transistor is substantially equivalent to a drain voltage of the power transistor; and

a clock signal that enables the regulation of a switching current flowing through the power transistor.

10. (Previously presented) The circuit of Claim 9, further comprising a first switch and a second switch for controlling a switching current that flows through the power transistor, wherein the first switch enables an output of the control component to be coupled to at least the power transistor and the sense transistor and wherein the second switch enables an output from a comparison component to be coupled to the control component, and wherein the comparison component's output indicates if the drain voltage of the sense transistor is substantially equivalent to a drain voltage of the power transistor.

11. (Previously presented) The circuit of Claim 10; wherein the first switch is arranged in an open state and the second switch is arranged in an open state if the switching current flowing through the power transistor and another switching current flowing through the sense transistor are both substantially equivalent to zero.

12. (Canceled)

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13. (Currently amended) A circuit for current protection, comprising:
a current mirror arranged with a sense transistor and a power transistor;
a current sink that is coupled to a drain of the sense transistor, wherein the current sink pulls
down a drain voltage of the sense transistor if a current flowing through the power transistor is less
than a limit;
a control component that is arranged to limit the current flowing through the power
transistor if the drain voltage of the sense transistor is substantially equivalent to a drain voltage of
the power transistor;
a comparison component that presents a signal if the drain voltage of the sense transistor is
substantially equivalent to the drain voltage of the power transistor; and
~~The current regulator of~~
~~Claim 12, further comprises~~
a clock signal that enables the regulation of a switching current flowing through the power transistor.

14. (Currently amended) A ~~current regulation circuit~~ for current protection, comprising:
a current mirror arranged with a sense transistor and a power transistor;
a current sink that is coupled to a drain of the sense transistor, wherein the current sink pulls
down a drain voltage of the sense transistor if a current flowing through the power transistor is less
than a limit;
a control component that is arranged to limit the current flowing through the power
transistor if the drain voltage of the sense transistor is substantially equivalent to a drain voltage of
the power transistor;
a comparison component that presents a signal if the drain voltage of the sense transistor is
substantially equivalent to the drain voltage of the power transistor; and
a first switch and a second switch for operating with a switching current flowing through the
power transistor, wherein the first switch enables an output of the control component to be coupled
to at least the power transistor and the sense transistor and wherein the second switch enables signal
presented by the comparison component to be coupled to the control component, and wherein the

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comparison component's signal indicates if the drain voltage of the sense transistor is substantially equivalent to a drain voltage of the power transistor.

15. (Currently amended) The circuit current regulator of Claim 14, wherein the first switch is arranged in an open state and the second switch is arranged in an open state if the switching current flowing through the power transistor and another switching current flowing through the sense transistor are both substantially equivalent to zero.

16-24. (Canceled)

25. (Currently amended) A current protection circuit, comprising:

a current mirror arranged with a sense transistor and a power transistor;

a current sink that is coupled to a drain of the sense transistor, wherein the current sink pulls down a drain voltage of the sense transistor if a current flowing through the power transistor is less than a limit; and

a control component that is arranged to limit the current flowing through the power transistor if the drain voltage of the sense transistor is substantially equivalent to a drain voltage of the power transistor. The circuit of Claim 23, wherein the control component circuit is further arranged to control the power transistor such that voltage regulation is performed to provide a regulated output voltage based on the control of the power transistor, and wherein the control component circuit further includes:

a comparator that is arranged to trip if a current at the drain of the power transistor reaches the limit current;

feedback circuitry that is arranged to provide a feedback signal based on the regulated output voltage;

feedback control circuitry that is arranged to provide feedback control responsive to a reference voltage and the feedback signal; and

a driver that is arranged to drive the gate of the power transistor.

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26. (Canceled)

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